METHODS: Treatment patterns and probability distributions for the Japanese Breast Cancer Treatment Model (JBCTM) were identified and confirmed via a series of meetings with a clinical expert panel and a study-specific survey of practice patterns of over 500 Japanese breast cancer physicians. Since no Japanese guidelines for evaluating level-of-evidence data yet exist, guidelines from the American Society of Clinical Oncology were used to stratify the clinical usage and clinical outcomes data for every drug. Consideration was given to disease stage and treatment setting in assigning the level of evidence, and nodal status, hormone receptor status, and menopausal status were also considered. Costs were obtained from government sources and hospital provider surveys and validated by an expert panel.
RESULTS: The model features treatment pathways for four breast cancer stages and resources and costs for every treatment option in the model. In total, the model includes over 450 level-of-evidence references for more than 60 drug treatments. The model can generate responses to an infinite number of queries regarding the probabilities of receiving a particular treatment in a given setting, cost per treatment, expected cost per patient, and an estimate of cost-effectiveness with consideration given to the evidence level associated with treatments.
CONCLUSIONS: To incorporate level-of-evidence data into a comprehensive treatment model, level-of-evidence guidelines can be applied to treatments in a given setting and combined with published data, data from surveys, and expert opinion to generate a valuable decision-making tool. The treatment pathways, costs and cost-effectiveness, and the evidence level associated with those pathways can then be evaluated on the credibility of clinical results.

PMI4

MARKOV MODELLING TO CONVERT TRIAL-BASED COST-EFFECTIVENESS INFORMATION TO OTHER COUNTRIES—THE TIOTROPIUM EXAMPLE

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OBJECTIVE: Tiotropium is a new once daily bronchodilator for the treatment of patients with Chronic Obstructive Pulmonary Disease (COPD). Treatment patterns in COPD differ considerably between countries and resource use in one country cannot be transferred to other countries without adjustments. The aim of this study was to develop a Markov model to transfer trial-based cost-effectiveness data about tiotropium versus ipratropium, salmeterol and existing therapy from one setting to another.
METHODS: Markov states were defined on the basis of COPD severity (moderate A, moderate B and Severe according to GOLD guidelines). Transition probabilities and probabilities of experiencing a severe or non-severe exacerbation were derived from three trial-based cost-effectiveness analyses, which were performed in the Netherlands, Belgium, the USA and in 18 other countries. Resource use was distinguished into maintenance treatment according to disease severity and treatment associated with exacerbations. The model allowed for country-specific input of resource use and unit costs including the probability and duration of hospitalization during an exacerbation.
RESULTS: All costs other than the cost of study medication were consistently lower in tiotropium than in the other three treatment arms, mainly because of the 13% to 27% lower probability of experiencing a (severe) exacerbation. Costs in the US were approximately twice as high as the costs in the Netherlands and Belgium. The proportion of total costs due to hospitalization varied between 30% and 60%, depending on the treatment arm and the country.
CONCLUSION: The difference between treatment groups observed in the trials could be modeled entirely by the monthly transition probabilities between disease states and the probabilities of experiencing an exacerbation in a given disease state. A Markov model in which resource use depends on disease state and exacerbations, irrespective of treatment group, is well suited to convert trial-based pharmacoeconomic data in COPD to other countries.

PMI5

A PROBLEM WITH STOCHASTIC ECONOMIC EVALUATION WHEN THE TIME HORIZONS FOR THE COST AND EFFECTIVENESS MEASUREMENTS ARE ASYMMETRICAL

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OBJECTIVE: In a recent economic evaluation conducted alongside an RCT, we encountered asymmetry in the time horizons for effectiveness and cost outcomes. The effectiveness variable was evaluated at the end of the trial, but some hospitalizations that started during the RCT continued beyond the end of the trial period. This paper demonstrates how estimates of cost-effectiveness ratios can be very sensitive to this problem at the analysis stage.
METHODS: Medical care resource-use data were collected prospectively in an RCT comparing two treatments for a chronic condition characterized by acute episodes often requiring hospitalization. A vector of country-specific unit costs was used to convert resource consumption into monetary values for the purpose of performing a cost-effectiveness analysis. Effectiveness was measured as the number of successfully treated patients (STPs) at the end of the six-month trial. Cost-effectiveness acceptability curves (CEACs) for analyses that include and exclude components of resource consumption beyond the trial are compared.
RESULTS: The incremental cost per STP is £10,008 if the components of resource use beyond trial are excluded and −£27,200 if included. This result is due to the effect

which exclusion or inclusion of cost data beyond trial has on estimates of incremental costs: £2,640 and −£7,130 respectively. The impact on the CEAC is shown to be profound e.g. for a critical ICER of £500, the probability that the treatment is cost-effective is increased by 0.732 if beyond-trial costs are included.
CONCLUSIONS: Producers and consumers of cost-effectiveness evidence need to be aware of the potential problem of asymmetry observed in our study since these results may have significant consequences on decision-making. Economic theory would suggest that the beyond-trial components should be excluded from our base case analysis since they will have had no bearing on the observed number of STPs.

PMI6

ESTIMATING AND COMPARING RESOURCE USE AND COST OF G-CSF USE IN CHEMOTHERAPY WITH THE ACTIVITY-BASED COSTING (ABC) METHOD IN THREE SETTINGS

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OBJECTIVES: to develop a standard methodology which describes, inventories and compares the activities associated with the management of neutropenia with G-CSF in chemo-treated cancer patients in three different settings: inpatient care, outpatient care and home care; to collect cost information associated with these activities for calculating a cost per administration of G-CSF from the hospital and home-care perspectives.
METHODS: The case study was conducted in Belgium where the three different settings are permanently active. Structured interviews of key personnel working in each setting were taken first to obtain a detailed overview of the activities, the frequencies, the resources used and related links to other departments involved when G-CSF is administered. Activities that had a high frequency of performance (at least weekly) were then selected. Time measurements of these frequent tasks, each with a fixed start- and end-point, were then determined. Unit costs for each resource used and labor costs were obtained from the administrative units.
RESULTS: Detailed activities in G-CSF management were identified and a "map" for the product use in each setting was established. Time measurements provided the basic information for labor costing. Belgian estimates for the cost per G-CSF administration, excluding the drug cost, was estimated at 7.4 Euro for inpatient care, 4.4 Euro for outpatient care and 4.2 Euro for the home-care setting. The main cost driver was found to be the cost of taking and analyzing blood samples in the inpatient setting where the cost of monitoring neutropenia is high compared to the other settings. Excluding these costs may favor the cost of hospital administration of G-CSF.
CONCLUSION: The methodology developed using the ABC-method of investigation helps to compare the same activities performed in administering G-CSF in different settings. It clearly identifies where potential improvements are possible so as to ensure efficient management of G-CSF administration.

PMI7

PROBABILISTIC SENSITIVITY ANALYSIS FOR EVALUATING COST-UTILITY OF ENTACAPONE TREATMENT FOR PARKINSON'S DISEASE

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OBJECTIVES: To assess uncertainty in a cost-utility analysis (CUA) of adjunct entacapone treatment with levodopa among patients with Parkinson's disease (PD). The purpose of the study was to apply probabilistic sensitivity analysis in the comparison of alternative treatment strategies using second-order simulation methods.
METHODS: Two treatment alternatives of PD, i.e. levodopa with or without entacapone, were compared in a cost-utility analysis. A Markov model was constructed based on data from phase III clinical trials of entacapone and a naturalistic health economic study of PD. Second order simulation and bootstrap methods were employed to provide understanding of the uncertainty due to sampling variation. Cost and utility parameters were drawn from empirical distributions. Parametric distributions were used in the generation of transition probabilities.
RESULTS: Using a bootstrap sample size of 200 and 1000 patients, joint distribution of the mean incremental costs and mean incremental utilities were calculated and displayed in the cost-utility plane. The results for a bootstrap sample of 1000 patients were all clustered in the quadrant IV that includes situations in which entacapone treatment yields gain in QALYs and cost savings. However, there was more variation with the sample of 200 patients. 85.4% of the bootstrap replications were in quadrant IV. 12.1% of the joint distribution fell into quadrant III indicating cost savings at the expense of loss in QALYs. Gain in QALYs at extra costs resulted in 2.1% of the observations. Only 0.4% of the simulated results indicated less QALYs and increased costs.
CONCLUSIONS: The simulation methods used provided valuable information on the sensitivity of the results of the CUA. The probabilistic sensitivity analysis used in this study strengthened confidence in the conclusions that entacapone as an adjunctive treatment to levodopa is both cost saving and increases the quality of life of PD patients.

PMI8

DO HEALTH CARE PURCHASERS PREFER PAYING FOR LIFE EXTENSION OR QUALITY OF LIFE IMPROVEMENT?

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